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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

REPORT OF THE MOUNTAIN PINE BEETLE SURVEY OF THE GALLATIN NATIONAL FOREST 1931

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February 9, 1932

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Mr. Miller

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Respectfully submitted,

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OF THE GALLATIN NATIONAL FOREST
1931

The survey of the Gallatin Forest was instituted in October of 1931 under a co-operative agreement with the Regional Office of the Forest Service at Missoula and was conducted by the Forest Insect Field Station, Bureau of Entomology, Coeur d'Alene, Idaho. The survey of the Gallatin Forest was to be merely part of a general program of reconnaissance to determine the status of mountain pine beetle activity over the entire area included in the Yellowstone Park Control Project. The need for a survey of the Gallatin Forest was apparent after the discovery of some centers of mountain pine beetle infestation in the northwestern part of the Park, which suggested the possibility of similar conditions prevailing on the adjacent national forests. The plans as outlined for the survey of the Gallatin forest included the Gallatin River drainage and the upper portion of the Madison River watershed outside of and adjacent to the western boundary of the Park. Subsequent information from a crew making a similar survey within the Park, indicating the possibility of a concentration of infestation immediately north of the Park, led to the inclusion of that part of the Yellowstone River drainage in the project. The crew engaged in the annual survey of the Beaverhead National Forest, and under the direction of the writer, was used for the Gallatin Survey.

It is the purpose of this report to show the status of mountain pine beetle infestation on the areas designated for survey in the

preceding paragraph. The survey was to be extensive unless concentrations of beetle work were discovered, in event of which more intensive work was planned for such areas. During the period of the survey, from October 8th to 20th, snow at the higher altitudes considerably handicapped the running of strip and in some places prohibited it. In addition, snow increased the probability of overlooking infested trees by covering with a concealing blanket the boring dust and pitch tubes which are used to distinguish attacked trees.

The data obtained indicates that the infestation over most of the forest is quite light, averaging only about one tree to 55 acres. Heavier concentration of insect work was noted on a few areas and the data for them has been arranged in Table I. The extent and location of these areas has been shown by giving the number of acres affected, the range and township, and the name of the general drainage. More intensive survey of the more heavily infested areas was desirable but impossible under the prevailing weather conditions and the short time available. Outside of these few centers of infestation there is estimated to be but 11,000 infested trees on approximately 600,000 acres. This light infestation indicates that for the most part the mountain pine beetle infestation on the forest is insufficient to class as epidemic. Also on the small portion of the Madison drainage surveyed, few infested trees were observed except on a few small areas.

The estimates of the infestation on the Gallatin and Madison Forests were secured from 575 miles of strip one chain broad and containing 246 infested trees. The infested trees included 79 lodgepole pine

TABLE I

AREAS CONTAINING IN EXCESS OF ONE MOUNTAIN PINE BEETLE ATTACKED TREE FOR EVERY TEN ACRES
GALLATIN NATIONAL FOREST - 1931

Location of Area	Name of Drainage or Area	Number of Sections Infested	Acres of Sample Strip Run	Number of Attacked Trees LlP	Number of Attacked Trees WbP	Attacks per Acre LlP	Attacks per Acre WbP	Number of Acres Infested	Number of Attacked Trees for Area LlP	Number of Attacked Trees for Area WbP
T10S R5E	Bacon Rind Cr.	16	121	--	21	--	.174	10,240	--	1,782
T11S R5E T11S R4E	Tepee Creek	16	259.5	17	33	.066	.127	10,240	676	1,300
T4S R2E T5S R2E	Placer Creek	4	76.3	8	--	.105	---	2,560	269(1)	--
T13S R4E	Denny Creek	5	139.5	--	20	--	.143	3,200	--	457
T10S R3E	Beaver Creek	10	137.7	1	22	.007	.160	6,400	46	1,022
T9S R7E	Motheron Will Cr.	4	35.5	5	--	.141	---	2,560	361	--
T10S R2E	Bad Luck Creek	1	60.0	--	51	--	.850	640	--	544
Totals and Averages		56	829.5	31	147	.039	.176	35,840	1,352	5,105

(1) The infestation is probably due to the attraction exerted by a fire which occurred on Placer Creek in July of 1931. In addition to the number given there is estimated to be about 200 additional infested trees around the fire line infested with the mountain pine beetle.

Remainder of Gallatin Forest	1,000	3774.00	48	22	.013	.006	600,000	11,000
Small portion of Madison	150						10,000	175

and 169 white-bark pine. Of the total strip data 300 miles were run in lodgepole pine, 70 in white-bark pine type, and the remainder in types not containing susceptible timber. The ratio of mileage run in the two susceptible types does not indicate the areas assignable to these two species of timber on the forest.

The data showed that the white-bark pine type had the greatest concentration of mountain pine beetle work while in general only a very light infestation existed in lodgepole pine. The attacked white-bark pine were much more numerous in 1931 then in 1930 judging from the ratio of red-tops to new attacks. The exact origin of the infestation in both types is obscure but there are indications that outside sources are responsible for much of the infestation although scattering dead white-bark pine indicate some infestation has been present in that type for a number of years. In white-bark pine the infestation is generally located on exposed ridges which seem to be the logical stopping places for insects that have come from a distant source. In lodgepole pine the infestation is so patchy in character as to point to the influx of beetles into each area from some outside source. If the infestation arose from local sources a general rise over large areas or the entire forest would be expected rather than the development of small patches of infestation over widely separated areas.

In Township 11 South, and Range 5 East, on Tepee Creek, there are many dying Engelmann spruce. A heavy infestation of the lodgepole pine beetle is present in the base of these trees, but no data was obtained to show that this insect is responsible for the attack above the

base. On 106.9 acres of strip 83 attacked spruces were counted, making an average of .776 trees per acre. Observation of these dead and newly attacked spruce indicate the infestation to have been present for more than a year with 1931 showing the heaviest attack. Diameters of the attacked trees are large, averaging 16 to 18 inches at breast height.

Destruction of occasional lodgepole pine by the lodgepole pine beetle is general over the entire area surveyed, but in no place was there a concentration of the work.

SUMMARY

The more important findings revealed by this survey are as follows:

(1) In general there is a very light infestation of the mountain pine beetle on the forest.

(2) A few areas show a concentration of barkbeetle attack.

(3) The character of the heavier infestations indicates their sources to have been distant.

(4) Lodgepole pine shows a much lighter concentration of insect activity per acre than white-bark pine.

A general summary of project costs is shown in the following tabulation.

SUMMARY AND ANALYSIS OF RESULTS AND COSTS
GALLATIN NATIONAL FOREST SURVEY - 1931

Items	Total	Man-days on Project: Effective field	Ineffective	Total
Man-days spent on survey	93	68	25	
Miles of sample strip	575.4			
Miles of strip per man-day	6.2	8.5		6.2
No. of sample strip acres	4603.2			
No. of sample strip acres per man-day		68.0		49.6
Acres covered by survey	645,000			
Acres covered per man-day		9486		6935
Mileage covered by car	2,812			

Total Cost of Survey

Labor	$ 474.07
Transportation	50.24
Subsistence	296.61
Equipment	--
Telephone & Telegraph	3.78
	$ 824.70

Cost of Survey Distributed

Cost per man-day	8.87
Cost per mile of strip	1.43
Cost per sample acre	.179
Cost per acre of region surveyed	.0013
Per cent of total area actually covered	.71

Ineffective time as follows in man-days:

Travel	11	- To and from project.
Sickness	5	
Bad weather	5	
Mail and supplies	1	